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THE EMERGENCE OF PRONUBA FROM THE YUCCA CAPSULES.

BY J. C. WHITTEN.

Studies of the eastern Yucca Moth (*Pronuba yuccasella*), and its importance in yucca pollination, have, from time to time, been recorded in the Garden Reports.* Here-tofore, a knowledge of the life history of this interesting insect has been incomplete in one detail, observations having left a break from the time when the larva ceases feeding in the capsule, until it is incased in its underground cocoon, where, the following spring, it is to change to the pupa state.

The past season, through suggestions of the Director of the Garden, steps were taken to ascertain the time and method of the passage of the insect from the capsule to the ground. Two plants of the common Yucca filamentososa were selected for observations. These yuccas bloomed about the last of June. On August 5th, perforations were seen, where a few of the larvae had left the capsules. To prevent other larvae from escaping unnoted, a bag was fastened closely around the scape of each plant, the top of the bag being held open by a large hoop, which surrounded the plant just below the seed pods. These bags were held in place by stakes driven into the ground, and insured catching any larvae that might drop from the pods. To prevent their crawling out of the bag, its upper edge was coated with tar.

Observations were regularly made morning and evening, from August 5th to August 12th. Up to the evening of the 10th, no larvae had made their appearance. The weather, meantime, was dry and hot. During the night

* Pp. 99 to 158, pl. 34 to 43, Third Garden Report; pp. 181 to 225, pl. 20 to 23, Fourth Garden Report.

of the 10th it rained more or less constantly, and when the bags were examined, at eight o'clock the next morning, a larva was found in bag no. 1. It remained cloudy, with little or no rain, until nearly eleven o'clock, when a lively rain set in. An examination of both bags at this time showed that no more larvae had come out. About one o'clock, it cleared up somewhat and four more larvae were found in bag no. 1, and eighteen in bag no. 2. It rained frequently during the afternoon and following night. At five o'clock in the afternoon, four more larvae were in bag no. 2, and at eight o'clock the next morning, still eighteen more had dropped in the same bag. These were the last ones caught, though the bags were left in place until the seed pods split open. Two larvae were seen to leave the pods, and this was while it was raining. These dropped quickly down at the end of a silken thread.

These observations show, therefore, that it is during rainy weather, when the ground is softened and consequently easily penetrable, that the larvae make their escape from the capsules and enter the soil; and it is of interest to note that they do this either during the daytime or at night, and not exclusively toward the end of the night, as Professor Riley had predicted.* The use of a thread, supporting the larva in its descent, is in accordance with the prediction of Professor Riley,† who, since the preceding observations were communicated to him, expresses the opinion that the larvae may descend both by use of a thread and by crawling, as does the codlin of the apple.

* Third Garden Report, 114.

† *l. c.* 114.